



DEFENSE INFORMATION SYSTEMS AGENCY

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IN REPLY
REFER TO: Joint Interoperability Test Command (JTE)

13 Aug 09

MEMORANDUM FOR DISTRIBUTION

Subject: Special Interoperability Test Certification of the Compunetix Inc. CONTEX[®] 240 and CONTEX[®] 480 with Conference Engine Release 1.0.1a

References: (a) DoD Directive 4630.5, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004
(b) CJCSI 6212.01D, "Interoperability and Supportability of Information Technology and National Security Systems," 8 March 2006
(c) through (e), see Enclosure 1

1. References (a) and (b) establish the Defense Information Systems Agency, Joint Interoperability Test Command (JITC), as the responsible organization for interoperability test certification.

2. The Compunetix Inc. CONTEX[®] 240 with Conference Engine Release 1.0.1a is hereinafter referred to as the System Under Test (SUT). The SUT is an audio conferencing bridging system that supports ten Digital Transmission Link Level 1 (T1s) (240 ports) for conferees. The SUT supports preset and Meet-Me conference types. The CONTEX[®] 480 employs the same software and trunk/line card hardware as the CONTEX[®] 240 Audioconferencing Bridge. JITC analysis determined the CONTEX[®] 480 Audioconferencing Bridge to be functionally identical to the SUT for interoperability certification purposes. The SUT has the capability to receive both standard (0, 1, 2, 3, and 4) and ABCD Dual Tone Multi-Frequency (DTMF) precedence digit formats and transmit the ABCD DTMF precedence digit format. The SUT meets all of the critical interoperability requirements as set forth in reference (c) and is certified for joint use within the Defense Switched Network (DSN). Testing was conducted using test procedures derived from reference (d).

The SUT is certified for use with any digital switching system on the Unified Capabilities (UC) Approved Products List (APL) that is certified interoperable within the DSN for a T1 Channel Associated Signaling (CAS) interface with DTMF signaling. The SUT is certified with a direct T1 CAS DTMF non-MLPP interface to the Public Switched Telephone Network (PSTN) with the following caveat: When assigning conferees to a preset conference, the conferees must be assigned as all PSTN or all DSN conferees, PSTN and DSN conferees can not be mixed unless the DSN switch is a Private Branch Exchange 2. Meet-me conferees, however, can be both DSN and PSTN with no exceptions. No other configurations, features, or functions, except those cited within this report, are certified by the JITC. This certification expires upon changes that affect interoperability, but no later than three years from the date of this memorandum.

3. This finding is based on interoperability testing conducted by JITC and Defense Information Assurance Security Accreditation Working Group (DSAWG) accreditation. Interoperability testing was conducted by JITC at the Global Information Grid Network Test Facility, Fort Huachuca, Arizona, from 2 through 13 March 2009. DSAWG grants accreditation based on the security testing completed by DISA-led Information Assurance test teams and published in a separate report (reference (e)). DSAWG accreditation was granted on 11 August 2009. The Certification Testing Summary (Enclosure 2) documents the test results and describes the test configuration.

4. The Functional Requirements used to evaluate the interoperability of the SUT and the interoperability statuses are indicated in Table 1.

Table 1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Functional Requirements	Met	UCR Paragraph
T1 CAS (B8ZS/ESF / AMI/SF) DTMF Signaling	Yes ¹	Yes	Preset Conferencing (R)	Yes	5.2.1.6.1
			Conference Notification Recorded Announcement (R)	Yes	5.2.1.6.1.1
			Conference Precedence Level (R)	Yes	5.2.2.8.7.1
			Automatic Retrial and Alternate Address (R)	Yes	5.2.1.6.1.2
			Bridge Release (R)	Yes	5.2.1.6.1.3
			Lost Connection to Conferee or Originator (R)	Yes	5.2.1.6.1.4
			Secondary Conferencing (R)	Yes	5.2.1.6.1.5
			Meet-Me Conferencing (C)	Yes	5.2.1.6.2
			Address Translation (R)	Yes	5.2.1.7
			DTMF signaling (C)	Yes	5.2.4.4.2
	Yes	See note 2.	Alarms (R)	Yes	5.2.11.3.4
			Security (R)	Yes	4.3.1.2
NOTES: 1 In accordance with the UCR, the SUT can meet the external bridge requirements via one of the following interfaces: IP, ISDN PRI, T1 CAS, or E1 CAS. The SUT meets the critical interoperability Functional Requirements via a T1 CAS interface with DTMF signaling. Since T1 CAS is the only interface supported by this conference bridge, it is a critical interface. 2 Security is tested by DISA-led Information Assurance test teams and published in a separate report, reference (e).					
LEGEND: AMI Alternate Mark Inversion B8ZS Bipolar Eight Zero Substitution C Conditional CAS Channel Associated Signaling DISA Defense Information Systems Agency DTMF Dual Tone Multi-Frequency E1 European Basic Multiplex Rate (2.048 Mbps) ESF Extended Superframe IP Internet Protocol ISDN Integrated Services Digital Network Mbps Megabits per second PRI Primary Rate Interface R Required SF Superframe SUT System Under Test T1 Digital Transmission Link Level 1 (1.544 Mbps) UCR Unified Capabilities Requirements					

5. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and


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references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the TSSI website at <http://jitc.fhu.disa.mil/tssi>.

6. The JITC point of contact is Joseph J. Roby, DSN 879-0507, commercial (520) 538-0507, FAX DSN 879-4347, or e-mail to joseph.robby@disa.mil. The JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The original tracking number for the SUT is 0832301.

FOR THE COMMANDER:

2 Enclosures a/s


for RICHARD A. MEADOR
Chief
Battlespace Communications Portfolio

Distribution (electronic mail):

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ADDITIONAL REFERENCES

- (c) Office of the Assistant Secretary of Defense, "Department of Defense Unified Capabilities Requirements 2008," 22 January 2009
- (d) Joint Interoperability Test Command, "Defense Switched Network Generic Switch Test Plan (GSTP), Change 2," 2 October 2006
- (e) Joint Interoperability Test Command, "Information Assurance (IA) Assessment of Compunetix JITC CONTEX 240/480 Conference Engine Release 1.0.1a (Tracking Number 0832301)," 11 August 2009

CERTIFICATION TESTING SUMMARY

- 1. SYSTEM TITLE.** The Compunetix Inc. CONTEX[®] 240, hereinafter referred to as the System Under Test (SUT), and CONTEX[®] 480 with Conference Engine Release 1.0.1a.
- 2. PROPONENT.** Defense Information Systems Agency-Pacific Command (DISA-PAC).
- 3. PROGRAM MANAGER.** Ms. JoAnne Rhoden, JHITS Program Manager, 477 Essex Street, Building 77, Pearl Harbor, Hawaii, 96860, e-mail: joanne.rhoden@disa.mil.
- 4. TESTER.** Joint Interoperability Test Command (JITC), Fort Huachuca, Arizona.
- 5. SYSTEM UNDER TEST DESCRIPTION.** The SUT is an audio conferencing bridging system that supports up to ten Digital Transmission Link Level 1 (240 ports) for conferees. The SUT supports preset and Meet-Me conference types. The SUT has the capability to receive both standard (0, 1, 2, 3, and 4) and ABCD Dual Tone Multi-Frequency (DTMF) precedence digit formats and transmit the ABCD DTMF precedence digit format. The SUT is made up of three components: the CONTEX[®] 240 bay, the Conference Engine, and the Windows Operator Console (WOC).

CONTEX[®] 240 Bay. The CONTEX[®] 240 bay is the conference bridge hardware. The hardware consists of the CONTEX[®] chassis, cards, and power supply.

Conference Engine. The Conference Engine is a Windows XP platform that runs the Conference Engine 1.0.1a software. This software controls the CONTEX[®] 240 hardware. The Conference Engine is the link between the CONTEX[®] 240 hardware and the WOC, and maintains a flat file database of conference information.

Windows Operator Console. The WOC is a Windows XP platform that runs the CONTEX[®] Console Software. The WOC is the user interface to the CONTEX[®] 240 conference bridge. The CONTEX[®] Console Software allows the user to perform needed system management functions. The CONTEX[®] Console Software receives information from the Conference Engine and gives the user the capability to edit database information. The real-time statistics of the CONTEX[®] 240 hardware and conferences are fed to the WOC by the Conference Engine.

6. OPERATIONAL ARCHITECTURE. The Unified Capabilities Requirements (UCR) Defense Switched Network (DSN) architecture in Figure 2-1 depicts the relationship of the SUT to the DSN switches.

7. REQUIRED SYSTEM INTERFACES. Requirements specific to the SUT and interoperability results are listed in Table 2-1. These requirements are derived from the UCR. Interface and Functional Requirements (FRs) and were verified through JITC testing.

Table 2-1. SUT Functional Requirements and Interoperability Status

Interface	Critical	Certified	Functional Requirements	Met	UCR Paragraph
T1 CAS (B8ZS/ESF / AMI/SF) DTMF Signaling	Yes ¹	Yes	Preset Conferencing (R)	Yes	5.2.1.6.1
			Conference Notification Recorded Announcement (R)	Yes	5.2.1.6.1.1
			Conference Precedence Level (R)	Yes	5.2.2.8.7.1
			Automatic Retrial and Alternate Address (R)	Yes	5.2.1.6.1.2
			Bridge Release (R)	Yes	5.2.1.6.1.3
			Lost Connection to Conferee or Originator (R)	Yes	5.2.1.6.1.4
			Secondary Conferencing (R)	Yes	5.2.1.6.1.5
			Meet-Me Conferencing (C)	Yes	5.2.1.6.2
			Address Translation (R)	Yes	5.2.1.7
			DTMF signaling (C)	Yes	5.2.4.4.2
			Alarms (R)	Yes	5.2.11.3.4
	Yes	See note 2.	Security (R)	Yes	4.3.1.2

NOTES:

1 In accordance with the UCR, the SUT can meet the external bridge requirements via one of the following interfaces: IP, ISDN PRI, T1 CAS, or E1 CAS. The SUT meets the critical interoperability Functional Requirements via a T1 CAS interface with DTMF signaling. Since T1 CAS is the only interface supported by this conference bridge, it is a critical interface.

2 Security is tested by DISA-led Information Assurance test teams and published in a separate report, reference (e).

LEGEND:

AMI	Alternate Mark Inversion	ISDN	Integrated Services Digital Network
B8ZS	Bipolar Eight Zero Substitution	Mbps	Megabits per second
C	Conditional	PRI	Primary Rate Interface
CAS	Channel Associated Signaling	R	Required
DISA	Defense Information Systems Agency	SF	Superframe
DTMF	Dual Tone Multi-Frequency	SUT	System Under Test
E1	European Basic Multiplex Rate (2.048 Mbps)	T1	Digital Transmission Link Level 1 (1.544 Mbps)
ESF	Extended Superframe	UCR	Unified Capabilities Requirements
IP	Internet Protocol		

8. TEST NETWORK DESCRIPTION. The SUT was tested at JITC's Global Information Grid Network Test Facility in a manner and configuration similar to that of the DSN operational environment. Testing the system's required functions and features was conducted using the test configuration depicted in Figure 2-2.

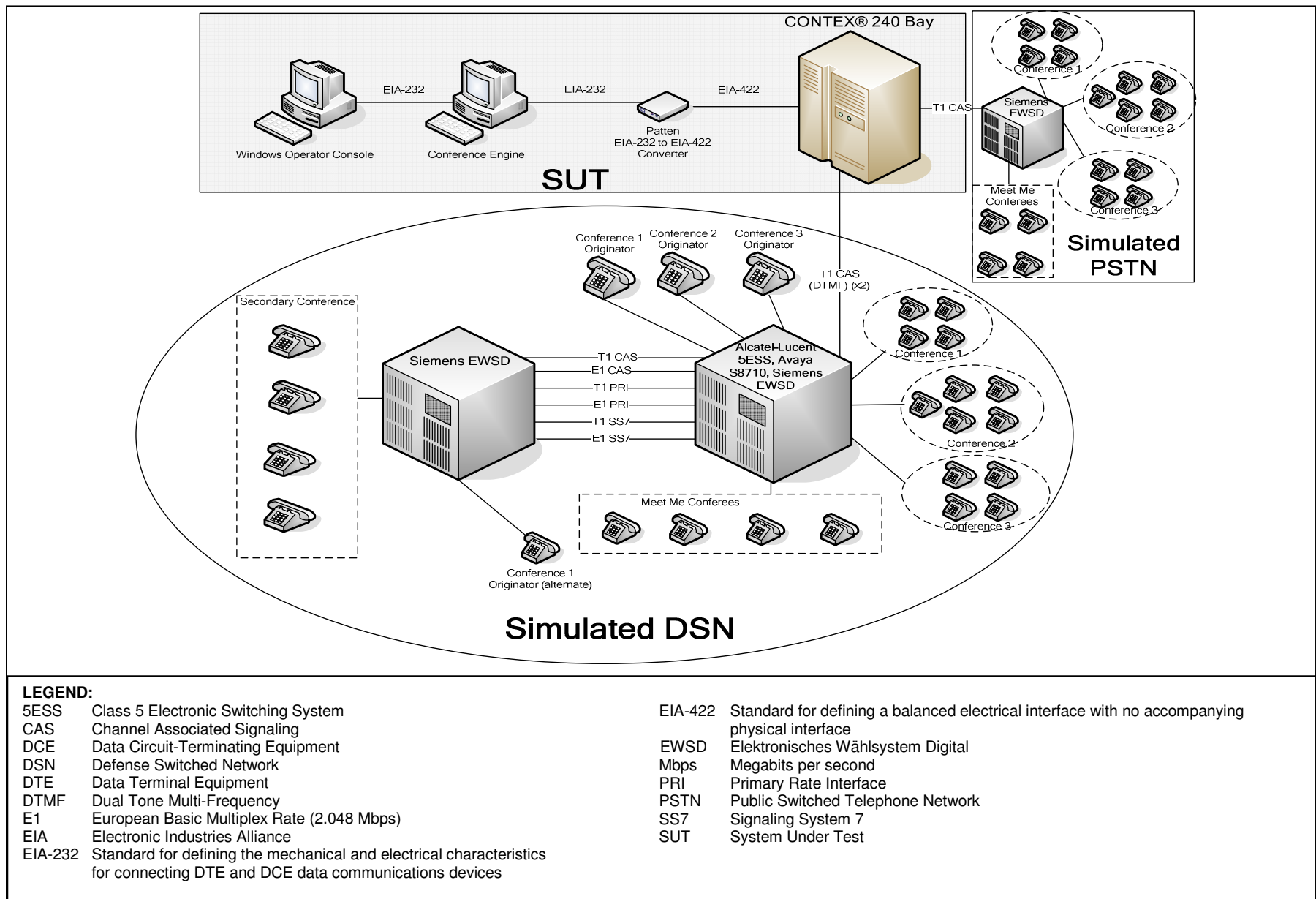


Figure 2-2. SUT Test Configuration

9. SYSTEM CONFIGURATIONS. Table 2-2 provides the system configurations, hardware, and software components tested with the SUT. The SUT was tested in an operationally realistic environment to determine interoperability with a complement of DSN switches noted in Table 2-2. Table 2-2 lists the DSN switches which depict the tested configuration and is not intended to identify the only switches that are certified with the SUT. The SUT is certified with switching systems listed on the Unified Capabilities (UC) Approved Products List (APL) that are certified interoperable within the DSN for a T1 Channel Associated Signaling (CAS) interface with DTMF signaling.

Table 2-2. Tested System Configurations

System Name		Hardware/Software Release	
Avaya S8710		Communication Manager (CM) 4.0 (R014x.00.2.731.7: Super Patch 14419)	
Siemens EWSD		Version 19d with Patch Set 46	
Lucent 5ESS		5E16.2, Broadcast Warning Message (BWM) 07-0003	
SUT	Component	Hardware	Software/Firmware
	WOC	996 MHz Intel Pentium III PC, 512 MB RAM	Windows XP with SP3, CONTEX® Console Software 2.535.7F,
	Conference Engine	3.40 GHz Intel Pentium 4 PC, 1 GB RAM	Windows XP with SP3, Conference Engine 1.0.1a
	CONTEX® 240 Bay	Processor Memory Module 3702-02	4.280
		Serial In/Out 3710-05-01	2.1.00
		Clock Module 3730-01	N/A
		Line Interface Module 3364-25-01	3.582
		Analog Enunciator Module 3370-03	1.291
		Switch Module 3101-01	N/A
		Conference Module 3200-01-10	1.261
LEGEND:			
5ESS	Class 5 Electronic Switching System	N/A	Not Applicable
EWSD	Elektronisches Wählsystem Digital	PC	Personal Computer
GB	Gigabyte	RAM	Random Access Memory
GHz	Gigahertz	SP	Service Pack
MB	Megabyte	SUT	System Under Test
MHz	Megahertz	WOC	Windows Operator Console

10. TEST LIMITATIONS. None.

11. TEST RESULTS

a. Discussion

(1) Preset Conferencing. The SUT met the following requirements for preset conference as described in UCR, paragraph 5.2.1.6.1.

(a) Ten separate conference bridges with each bridge having the capacity for one originator and 20 conferees.

(b) The capability to function as the “Primary,” “Secondary,” or “Alternate” bridge that will interconnect to other bridges that support up to a maximum of 191 conferees using all ten bridges off the same switch for the same conference.

(c) Preset Conference (abbreviated pool of subscribers/bridges) assignment of abbreviated numbers not greater than 20 switch address numbers per bridge. Such an address number could be a combination of subscriber lines and other conference bridge access.

(d) Preset conference network(s) that require more than 20 conferees uses the cascading bridge method of expanding the number of conferees beyond 20.

(e) Each preset conference bridge is capable of Multi-Level Precedence and Preemption (MLPP) access control and is fully interoperable with the serving switch to permit full MLPP access and control.

(f) When a conferee's telephone is not answered, an automatic disconnect takes place within an adjustable interval of 15 to 60 seconds after a bridge leg is first connected to the conferee line.

(g) Originators of the preset conference have the capability of adding up to five non-programmed conferees (within the 21 conferees capability) to the conference by sequentially keying each add-on address and connecting the conferee to the bridge.

(2) Conference Notification Recorded Announcement. When the conference equipment receives the first off-hook supervisory signal from an answering conferee, conference notification recording shall be applied, and shall continue as an audible announcement to answering conferees and to the originator until all conferees answer. The conference notification recording shall automatically be removed 2 seconds after the last conferee answers, indicating, by such removal, that the conferees have all answered and that the conference is ready to begin. The SUT met the following FRs for Origination and Recording as described in UCR, paragraph 5.2.1.6.1.1.

(a) Each bridge generates a notification recording that is audible only to those conferees on that bridge.

(b) When all conferees on a bridge have answered, the conference notification recording is removed automatically from the bridge two seconds after the last conferee answers.

(c) When the conference notification recording is removed automatically from a bridge, the notification recording from the adjacent bridge, if continuing, then becomes audible to the originator and to the conferees on the remaining bridge(s).

(d) When a conferee disconnects, a conference disconnect tone is sent to the originator and other conferees in the conference.

(3) Conference Precedence Level. The SUT met the following FRs for Conference Precedence Level as described in UCR, paragraph 5.2.2.8.7.1.

(a) When a preset conference is initiated, an idle bridge in the desired conference group is seized and the conference connections attempted.

(b) When all conference bridges are busy, ROUTINE conference call attempts are connected to a "Line Busy" tone and the call attempts at precedence levels above ROUTINE reexamine all conference bridges on a preemptive basis.

(c) When a conference bridge is busy at the lowest level of precedence stored for all units, it shall be preempted for a higher precedence conference call.

(d) When a conference bridge is preempted, a two-second burst of preempt tone is provided to the conferees on the existing conference. The existing connections to the bridge are dropped and the bridge automatically sends an on-hook signal to the associated switch ports to permit the new connections to be established.

(e) When the requested precedence level is equal to or lower than that of any existing conference, the connection is denied and the caller is provided a Blocked Precedence Announcement.

(4) Automatic Retrial and Alternate Address. The SUT met the following FRs for Automatic Retrial and Alternate Address as described in UCR, paragraph 5.2.1.6.1.2.

(a) Off-hook supervision is returned to the originator from each bridge when all conferees have answered or when the originator has forced the conference prior to all conferees answering.

(b) If answer supervision is not returned from any conferee location within an adjustable interval of 15 to 60 seconds, one automatic retrial is made to the primary conferee address.

(c) Conferees are provided with alternate addresses that the SUT tries when the call fails to complete to the primary address.

(d) When a call to a primary address fails to complete within two trials, the call is directed to an alternate address, if provided, and two call attempts are made to the alternate address.

(5) Bridge Release. The SUT met the following FRs for Bridge Release as described in UCR, paragraph 5.2.1.6.1.3.

(a) The primary bridge is released when on-hook supervision is received on the originating port of the primary bridge or on all of the other conference bridge ports.

(b) If on-hook supervision is received on the originating port of secondary or tertiary bridges, all subsequent connections and equipment are released.

(c) A conference bridge is released after all attempts at call completion are made and no answers are received on all ports.

(d) A release of conference bridges is such that it is impossible for the bridges to become locked together.

(6) Lost Connection to Conferee or Originator. The SUT met the following FRs for Lost Connection to Conferee or Originator as described in UCR, paragraph 5.2.1.6.1.4.

(a) If the originator is lost or preempted, the bridge is held up long enough for preempt tone to be given to all conferees.

(b) If a connection to a conferee is lost, due to disconnection or preemption, a distinctive disconnect signal, defined as a conference disconnect tone, is provided to the conference originator and all conferees.

(7) Secondary Conferencing. The UCR requirement states that a switch shall provide the capability of secondary conferencing, which is the ability to interconnect conference bridges located at separate DSN switches. The SUT, as an external bridge connected to the switch, met the following FRs for Secondary Conferencing as described in UCR, paragraph 5.2.1.6.1.5.

(a) When a conference is activated and two or more of the addressees require a secondary bridge, the address is processed in the normal manner and directed toward the office serving the secondary equipment.

(b) The conference equipment is designed so that it may be used alternatively for primary or secondary conferences.

(c) Identical operational features, such as application and removal of the conference notification recorded announcement, are provided for both primary and secondary conferences.

(8) Meet-Me Conferencing. The UCR requirement states that a switch shall meet the Meet-Me conference requirements with an internal or external conference bridge. The SUT, as an external bridge connected to the switch, met the following FRs for Meet-Me Conferencing as described in UCR, paragraph 5.2.6.2.

(a) Each Meet-Me conference bridge shall be fully capable of MLPP access and control as described in paragraph 5.2.2.2.4.2.

(b) When a precedence call above ROUTINE is placed to a Meet-Me conference bridge that is activated with no remaining idle resources, the switch shall conduct a preemptive search to determine the lowest active resource on the bridge, and that resource shall receive a precedence notification tone and be preempted. All remaining conferees on the bridge shall receive a conference disconnect tone.

(9) Address Translations. The SUT met the following FRs for Address Translations as described in UCR, paragraph 5.2.1.7.

Translation of the seven-digit conference address is met as follows:

(a) The switch shall have the capability to translate three digits of the switch code.

(b) The first two digits of the four-digit line number are utilized to identify the switching center at which the conferencing equipment is located.

(c) The four-digit line number is translated to indicate the particular preset conference arrangement.

b. Test Summary. The SUT met the critical interoperability requirements for preset and meet-me conferencing and is certified for use in the DSN. The SUT is certified for use with any digital switching system on the UC APL that is certified interoperable within the DSN for a T1 CAS interface with DTMF signaling. The SUT is certified with a direct T1 CAS DTMF non-MLPP interface to the Public Switched Telephone Network (PSTN) with the following caveat: When assigning conferees to a preset conference, the conferees must be assigned as all PSTN or all DSN conferees, PSTN and DSN conferees can not be mixed unless the DSN switch is a Private Branch Exchange 2. Meet-me conferees, however, can be both DSN and PSTN with no exceptions.

12. TEST AND ANALYSIS REPORT. No detailed test report was developed in accordance with the Program Manager's request. JITC distributes interoperability information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive interoperability status information is available via the JITC System Tracking Program (STP). The STP is accessible by .mil/gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) at <http://jit.fhu.disa.mil> (NIPRNet), or <http://199.208.204.125> (SIPRNet). Information related to DSN testing is on the TSSI website at <http://jitc.fhu.disa.mil/tssi>.